REMARKS

Claims 1-48 are all the claims pending in the application. By this Amendment, Applicant editorially amends claims 3, 17, 27-40 and 43. The amendments to claims 3, 17, 27-40 and 43 were made for reasons of precision of language and consistency, and do not narrow the literal scope of the claims and thus do not implicate an estoppel in the application of the doctrine of equivalents. The amendments to claims 3, 17, 27-40 and 43 were not made for reasons of patentability. In addition, Applicant adds claims 47-48 in order to provide more varied protection.

I. Specification

The Examiner objected to the Specification for referring to speech/noise detection as "voiced/unvoiced". Applicant thanks the Examiner for pointing out with particularity the terminology thought to be indefinite. Applicant herein amends the Specification to clearly define that "voiced/unvoiced" as used in the Specification means "speech/noise". In view of this self-explanatory amendment to the specification, Applicant respectfully requests the Examiner now to withdraw this objection.

II. Claim Objections

The Examiner objected to claims 3, 17, 27-40 and 43-44 because of minor informalities. However, with respect to the Examiner's objection of using "voiced/unvoiced" terminology for speech/noise detection in claims 28 and 44. Applicant respectfully submits that these claims do not contain the objected terminology. Therefore, the Examiner is respectfully requested to

withdraw this objection of claims 28 and 44. With respect to other objection, Applicant has revised the claims, and respectfully submits that the claims as now presented no longer include the potential informality mentioned by the Examiner. Applicant therefore respectfully requests the Examiner to withdraw the objections to the claims 3, 17, 27-40 and 43-44.

III. Claim Rejections under 37 U.S.C. § 103

Claims 1-40 are allegedly rejected under 35 U.S.C. 103 (a) as being unpatentable over U.S. Patent No. 6,507,814 to Gao (hereinafter "Gao") in view of U.S. Patent No. 5,960,389 to Jarvinen et al. (hereinafter Jarvinen). Applicant respectfully traverses this rejection in view of the following remarks. Of the rejected claims, only claims 1-3, 15-17 and 27-29 are independent. This response focuses initially on the independent claims.

With respect to claim 1, the Examiner alleges that Gao teaches a decoding method comprising a first and third step as set forth in claim 1 and that Jarvinen teaches a second step as set forth in claim 1. Applicant respectfully disagrees with the Examiner.

Applicant respectfully submits that the combination of Gao and Jarvinen does not teach or suggest a number of unique features of claims 1. For example, Gao and Jarvinen taken alone or in any conceivable combination do not teach or suggest *a first step of smoothing the gain using a past value of the gain*, and *a third step of decoding the speech signal using the gain that has been smoothed and limited* as recited in the independent claim 1. The Examiner alleges that Gao's smoothing is similar to the a first step as set forth in claim 1 and Gao's reproduced speech signal in similar to a third step of decoding as set forth in claim 1.

Gao teaches that to support lower bit rate encoding modes, the speech encoder needs to depart from strict waveform matching criteria of regular CELP coders and strive to identify significant perceptual features of the input signal (*see* Abstract). In particular, Gao teaches a communication system which has an encoder and a decoder (Fig. 1; col. 3, lines 11 to 25). A decoder selects excitation vectors from an adoptive codebook and a fixed codebook, sets the adoptive and fixed gains and sets the parameters for a synthesis filter. With these parameters and vectors set, the decoder processing circuitry generates a reproduced speech signal (Fig. 5; col. 7, lines 4 to 25).

The focus of the Gao's system is a novel encoder operating in three stages (Col. 5, lines 27-to 35). In the first stage, the encoder selects an excitation vector, its corresponding subcodebook from a fixed codebook and gain based on a variety of factors (Fig. 2; col. 5, line 57 to col. 6, line 25). During the second stage, Gao teaches searching for an optimum gain values for the excitation vectors identified in the first stage (Fig. 3, col. 6, lines 25 to 43). In the third stage, the encoding processing circuitry applies gain normalization, smoothing and quantization to the jointly optimized gains identified in the second stage of encoder processing (Fig. 4, col. 6, lines 43 to 51). These modeling parameters are transmitted to the receiving device (col. 6, lines 52 to 64).

Gao's smoothing, however, is not disclosed in concrete details as to how this smoothing is performed. According to Gao's Fig. 4, there is no input to the smoothing (element 403). As a result, it is impossible to achieve the smoothing using past gain value. In short, Gao's teaching of smoothing is too indefinite. Gao clearly fails to teach or suggest smoothing gain using the

past value of the gain. Similarly, Gao only teaches an output node (element 539) of the post filter of the receiving side. It does not teach or suggest how the smoothing gain is related to speech decoding. Gao clearly fails to teach or suggest any connection between the two. In short, Gao also fails to teach or suggest decoding the speech signal using the gain that has been smoothed and limited.

In addition, Gao and Jarvinen, taken alone or in any conceivable combination do not teach or suggest *a second step of limiting the smoothed gain* as recited in the independent claim 1. The Examiner acknowledges that Gao fails to teach or suggest limiting the smoothed gain as set forth in claim 1 (see page 4 of the Office Action). However, the Examiner alleges that Jarvinen cures this deficiency of Gao. Applicant respectfully disagrees with the Examiner. Jarvinen teaches that during the comfort noise generation, no index to the codebook is transmitted, thereby, excitation is randomly generated by the excitation generator and then the vectors are scaled by average excitation gain. As a result, mismatch between random and correct excitation results happen (col. 4, line 56 to col. 5, line 15). To improve the noise generation methods, Jarvinen teaches applying a spectral control filter (col. 5, lines 20 to 35).

Furthermore, Jarvinen teaches circuitry for evaluating comfort noise parameters on the transmission side, addressing the problem of when there exists a small number of frames within an averaging period for which some or all of the speech coding parameters give a poor characterization of the typical background noise. To remedy this problem, Jarvinen teaches the speech coding parameters which are buffered in block 107a and 108a are subjected to a thresholded median replacement process before they are applied to averaging blocks 107 and 108

for computing the average excitation gain and the average short term spectral coefficients. In this process, the parameters within the averaging period which have non-typical values of the background noise are replaced, if specific conditions are met (Fig. 4; col. 9, line 60 to col. 10, line 15).

First, the set of excitation gain values 107b buffered in block 107a over the averaging period are ordered according to their values. Each of the excitation gain values has its own index within the set. The ordered set of gain parameters 302 is forwarded to a median replacement block 303, in which those excitation gain values differing the most from the median value (the difference must exceed a predetermined threshold value), are replaced by the median value of the parameter set (Fig. 4; col. 10, lines 15 to 26). In short, Jarvinen teaches that if there exist individual excitation gain values such that the difference between the excitation gain value and the median value exceeds the predetermined threshold, the selector 307 is switched to the position in which excitation gain values 309 for the averaging block 107 are obtained from the median replacement block 303 as signal 308.

Jarvinen, however, teaches comparing the difference between an excitation gain and an excitation gain median to a threshold and replacing a gain value exceeding the threshold. The median replacement of Jarvinen is applied to a group of gains as such it serves to substitute the gain values far from the median with a value exceeding a threshold value. As a result, a new group of gains is formed. This group of gains has a smaller range of values. Jarvinen, however, deals with a group of gains and is different from limiting the value of a single smoothed gain as recited in claim 1.

In short, the references, taken alone or in any conceivable combination, do not teach or suggest the subject matter of claim 1. Based on at least the foregoing exemplary reasons, Applicant respectfully submits that the combination of Gao and Jarvinen fails to disclose all of the claimed elements as arranged in claim 1. Therefore, the combination of Gao and Jarvinen clearly cannot render the present invention obvious as recited in claim 1. Thus, Applicant believes that claim 1 is allowable, and respectfully requests that the Examiner withdraw the § 103(a) rejection of claim 1.

Independent claims 2, 3, 15-17 and 27-29 recite similar features to the ones argued above with respect to claim 1, therefore, these arguments are submitted to apply with equal force herein. Therefore, for at least these reasons, Applicant respectfully submits that claims 2, 3, 15-17 and 27-29 are allowable, and respectfully requests the Examiner to withdraw this rejection of the claims. Claims 4-14, 18-26 and 31-40 are patentable at least by virtue of their dependency on independent claims 1-3, 15-17 and 27-29.

V. New Claims

New claims 47-48 are patentable at least for the arguments submitted above with respect to the other independent claims.

VI. Allowable Subject Matter

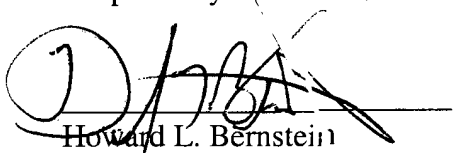
Applicant thanks the Examiner for allowing claims 41-46. Applicant does not acquiesce to any inferences or presumptions drawn from the Examiner's statement regarding the reasons for allowance.

VI. Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly invited to contact the undersigned attorney at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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